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Worldwide Report

NUCLEAR DEVELOPMENT AND PROLIFERATION

No. 139

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SENATOR SAYS NATION TIED TO U.S. NUCLEAR ARMS BUILDUP

Canberra THE AUSTRALIAN in English 16 Feb 82 p 4

[Article by Nicholas Rothwell]

[Text] THE sale of Australian uranium to the United States has locked this country into the new American nuclear arms build-up, the Leader of the Australian Democrats, Senator Chipp, claimed yesterday.

Senator Chipp, a persistent critic of uranium mining, warned that Australia's yearly exports of 4000 tonnes of uranium to the US would have grave consequences.

The new American administration had decided on an unprecedented build-up of its nuclear strike force and this development would place enormous strain on America's own uranium industry.

"Earlier this year, the American administration decided that because of the extra demand for uranium for warheads it would have to use uranium from its civilian power plants to produce nuclear weapons," Senator Chipp said in an interview with *The Australia*.

Because of this shift the US was heading towards a situation where there was no longer any clear distinction between the commercial and military applications of nuclear technology.

Senator Chipp said Australia had no control over where its uranium exports to the US ended up.

"Even if we could show that our uranium was not specifically in a nuclear warhead, it is clear that our supplies of uranium would have freed existing supplies from civilian uses for military purposes," he said.

Senator Chipp described Australia's uranium safeguards policy as having already degenerated to "a shambles" even before the new situation had emerged in the US.

The policy launched by the Federal Government in 1977 had always had two conflicting goals – to make money and to prevent nuclear proliferation, he claimed.

CAPTIVE

"In the last five years the latter goal has suffered, and ever since Mr Anthony envisaged Australia becoming the Saudi Arabia of uranium the Government's policy has been captive to the fast buck," Senator Chipp said.

One by one the safeguards which had been proposed by Australia had been forgotten and diluted.

Australia no longer restricted its sales of uranium to countries that were subject to inspection by the International Atomic Energy Agency.

"Contracts are now signed with countries before safeguard provisions are concluded," Senator Chipp said.

"Australia has some very hard soul-searching to do in relation to the mining of uranium."

It could no longer be said that this country was mining uranium for peaceful purposes, since the nuclear power industry was in the doldrums.

Sales of new reactors were almost non-existent and even proposed plans were being cancelled because the community was now more aware of the dangers of nuclear power and people were more reluctant to have nuclear plants in their backyard.

"With this slump in nuclear power demand and credibility and the continued obsession with nuclear weaponry that our chief ally has, Australia has an enormous responsibility," Senator Chipp said.

'"This country, with 20 per cent of the world's uranium, could ensure that the arsenals of mad men were not filled simply because Australians wanted a fast buck."

CSO: 5100/7517

U.S. MILITARY SATELLITE MAKES AUSTRALIA NUCLEAR TARGET

Sydney THE SYDNEY MORNING HERALD in English 10 Feb 82 p 10

[Article by Jenni Jewett]

[Text] CANBERRA. — Australia's leading defence expert, Dr Desmond Ball, says Australia faces increasing risk of nuclear attack because of growing dependence on America's specialised defence communications program, Fleet Satellite Communications.

The satellite system is used for top secret messages and links the US President and Secretary of Defence with field commanders all over the world. It also has direct links with strategic nuclear Intercontinental Ballistic Missiles and nuclear bomber forces.

Australia has become part of the system through installation of a terminal at North West Cape which will begin working in August.

Writing in the Pacific Defence Reporter, Dr Ball says that this greatly expands Australia's communication with US nuclear forces.

Since 1967, the country has been linked to a lower-level naval and regional satellite communications system, but the installation of the new terminal last year significantly expanded the connection because of the importance of the fleet satellite communications system.

Dr Ball, a fellow at the strategic and defence studies centre at ANU, has become an internationally recognised specialist on defence bases and international strategic communications.

He says that Australia's link with the fleet communications system "must further reinforce Soviet determination to target North West Cape in any nuclear exchange."

"In any nuclear attack, the Soviet Union would very likely attack all the (Fleet Satellite Communications) ground stations in order to disrupt US strategic command and control capabilities."

As a related development, special UHI radios are to be fitted to all RAN ships and most RAN bases over the next five or six years.

The radios will depend entirely on the Fleet Satellite Communications system.

Dr Ball says that this would give the Americans the ability to block Australian access to these channels and therefore communications with its own fleet.

CSO: 5100/7516

PUBLIC GROUPS SEEK TO BAR U.S. NUCLEAR SUBS FROM PACIFIC

Canberra THE AUSTRALIAN in English 10 Feb 82 p 2

[Article by Nicholas Rothwell]

[Text] A COALITION of church leaders, unionists, federal politicians and distinguished academics has launched a peace campaign to stop deployment of American nuclear submarines in the Pacific.

The group, whose members include Senator Don Chipp, Professor Manning Clark, Senator Ruth Coleman, the ACTU president Mr Dolan and the Anglican Bishop of Bendigo, Bishop Oliver Heyward, has produced a manifesto proposing Australian responses to the nuclear arms race.

Members of the group suggest boycotts on international companies involved in the arms industry, warn that Australia is intimately involved in the latest American nuclear weapons system and call for the immediate development of a nuclear-free zone in the Pacific.

The main aim of the new group, Protest and Survive, is to stop the US from continuing to build its Trident nuclear submarines, which will cruise the Pacific Ocean and which, it is claimed, would be controlled partly from American bases in Australia.

Protest and Survive is giving all funds raised by their manifesto to the work of Pacific Peacemaker, a small yacht which is being sailed across the Pacific from Sydney to confront and try to block the progress of the Trident at its home base, Bangor on the US Pacific coast.

Pacific Peacemaker is captained by Perth bricklayer and unionist Mr Bill Ethell.

Other prominent religious leaders, academics and politicians who have backed the movement include the president of the UN Association, Dr Keith Suter, the general secretary of the Australian Council of Churches, Dr Jean Skuse, the Reverend Toska Foley of the Uniting Church and Mrs Jean Melzer, former senator for Victoria.

The group makes several claims about the operation of the Trident which are denied by the US Department of Defence and the Pentagon:

- That plans exist for home bases for the Trident submarine to be developed at Cockburn Sound in Western Australia and at Palau Island in Micronesia.
- That Western Australia's North West Cape communications base can be used to communicate with submerged submarines and "the command to unleash the weapons of doom could be transmitted through this facility". The Pentagon also denies that the US bases in central Australia, at Pine Gap and Nurrungar, can target Trident missiles.
- That the US base at Smithfield, South Australia, supports a satellite system which may be used to retarget Trident missiles.

The main thrust of the protest movement is given by Professor Manning Clark's assertion that "the task of opinion-makers and decision-takers in Australia is to eschew all association with those who are prepared to use atomic weapons".

CSO: 5100/7516

URANIUM ENRICHMENT TECHNIQUE ENDS NEED FOR FOREIGN HELP

Canberra THE AUSTRALIAN in English 12 Feb 82 p 2

[Article by Nicholas Rothwell]

[Text] A WORLD-class uranium enrichment technique independently developed in Australia could be used to build a billion-dollar nuclear enrichment plant without help from foreign companies, the director of the Australian Atomic Energy Commission disclosed yesterday.

Giving the first details of the commission's top-secret nuclear enrichment project, which is kept classified because of the terms of the Nuclear Non-proliferation Treaty, Professor Stuart Butler said the involvement of local technology was a definite option in any plans for an enrichment plant.

A Federal Government-backed consortium of resource development companies, the Uranium Enrichment Group, is selecting an enrichment technology for use in the proposed plant.

The group — comprising CSR, BHP, Western Mining and Peko Wallsend — is believed to be only weeks away from choosing between European, French, American and Japanese suppliers who are competing for the lucrative contract.

Professor Butler said the enrichment process developed by a hand-picked team at the commission's Lucas Heights research centre near Sydney was of international standard and could play a vital part in the first enrichment plant.

Since the capital costs of building the plant will run into several hundreds of millions of dollars, any local participation in the project would cut the flow of money out of Australia and give a vital boost to Australia's high-technology industry.

The proposed enrichment plant would triple the value of Australian uranium sold to foreign nuclear power companies, and would be expected to pay for itself in increased export earnings.

The commission's enrichment project was set up 12 years ago by its former director, the pioneering nuclear expert Dr Ken Alder. It is now "technically mature."

According to Professor Butler, commercially viable enrichment devices are installed and functioning at Lucas Heights and could form part of a full-scale production plant.

"We have a cascade of centrifuges which enrich uranium and we can carry out this process until the fuel is rich enough for use in a conventional nuclear power reactor," Professor Butler said.

Centrifuge enrichment, the most economical method of enriching nuclear fuel, has been developed in Europe and is being pushed by the United States as the basis for its expanded nuclear industry.

"On the basis of information gleaned and surmised, we have every reason to believe that our centrifuges compare in efficiency with the overseas models now being considered for the Australian enrichment plant," Professor Butler said.

His claims for the commission's research have been confirmed.

The prefeasibility study conducted for the Federal Government by the Uranium Enrichment Group concluded that local technology was sound but that limited manufacturing expertise existed in this country.

"Some features of the AAEC technology could be integrated with overseas technology with mutual advantage and this should be explored," the group's confidential report said.

Professor Butler said Australian industry could scale up within a few years to produce the equipment needed for the enrichment plant, which is due to enter operation in 1990.

But foreign suppliers could provide the centrifuge machines needed at the outset.

"The Uranium Enrichment Group definitely has the option to go completely Australian, we have our own independent technology — but it could also use Australian know-how and processes if it selects a foreign supplier," Professor Butler said.

Experts from the commission are holding a series of meetings with representatives from French, European, Japanese and American nuclear firms who are lobbying for the Australian contract.

CSO: 5100/7516

CLERGYMAN SPLITS CHURCH WITH RAP AT ANTI-NUCLEAR GROUP

Canberra THE AUSTRALIAN in English 10 Feb 82 p 2

[Article by Nicholas Rothwell]

[Text] THE conservative wing of the Uniting Church issued a strong challenge yesterday against policies pursued by radical church members and some ministers.

One of the best-known traditional Uniting Church ministers, the Reverend Dr John Williams, led an unprecedented public attack on the Church's Division of Social Justice.

The division is closely associated with a policy of opposition to resource development and has many links with environmental and anti-uranium groups throughout the country.

In the latest issue of the official publication, Church And Nation, Dr Williams has published a Christian defence of resource development and the growth of companies in the free market, while accusing his opponents of promoting a vision of a coercive Utopia.

The bitter debate over church policies reflects a struggle for power in its powerful Victorian synod, which has adopted the stance of the division.

Recently the synod sold all its shares and interests in uranium mining companies and urged all members of the denomination to do the same — a move which was criticised by many traditional ministers as a gesture which exceeded the limits of the church's proper role in society.

Dr Williams claimed yesterday the Social Justice Division was engaged in spreading misinformation in an attempt to promote its viewpoint and had waged a "disgraceful campaign" against mining companies such as CRA.

He opposed the actions of the division in espousing zero economic growth, condemning high technology, capitalism and "obscene" corporation profits, and said the Uniting Church had been divided by these policies.

He said a policy of limiting economic growth was morally wrong and only increased productivity could be defended by a Christian.

In a further statement yesterday, Dr Williams accused the division of presenting misleading information on energy in order to back up its campaigns.

"The division peddles innumerable pamphlets and booklets opposing nuclear energy but does not make available to church members even one paper making out the alternative case," Dr Williams said.

He claimed that a long-term effort by many clergy of the Uniting Church had been mounted against CRA.

"Some four years ago a document littered with errors of fact was produced by the Galiwin'ku Parish of the Church (in the Northern Territory) — the present campaign shows a similar disregard for truthfulness," Dr Williams said.

CRA had shown itself to be a corporation which took its social responsibilities very seriously and had bent over backwards to co-operate with Aborigines and respect their land rights.

DANGERS

Dr Williams said the campaign was merely a continuation of the Social Justice Division's attempt to attack nuclear energy and all centralised energy production.

"Most members of the Division of Social Justice embrace as their social ideal a radically decentralised society.

This strategy would force a dispersal of Australia's energy resources and would bring about the "Utopia" the division desired.

"Members of the division spread misinformation about nuclear energy, make unsubstantiated attacks on mining companies and suggest that the sole motivation for their actions is a concern for the alleged dangers of nuclear energy and the well-being of the Aboriginal people," Dr Williams said.

CSO: 5100/7516

AUSTRALIA

ROXBY DOWNS COULD BE WORLD'S LARGEST URANIUM DEPOSIT

Canberra THE AUSTRALIAN in English 12 Feb 82 p 25

[Text] ROXBY Downs is the most contentious political issue in South Australia for decades, hailed as the State's economic saviour, shunned as an environmental hazard.

Whichever way you look at it, the question of whether its massive reserves of uranium, gold and copper stay in the ground or are mined remains of monumental significance to the future of the State.

In the next few weeks, South Australian MPs will decide whether or not to give the $1000-million venture the green light by passing a crucial Indenture Bill containing infrastructure arrangements.

Already the joint venture planning to mine the deposits in South Australia's far north – the Western Mining Corporation and BP – have indicated that rejection of the bill would force the project to be "put on ice."

Estimates suggest the Roxby Downs deposit could contain as much as 500,000 tonnes of uranium which, if proven, would make it the world's largest uranium deposit.

Similarly, preliminary studies indicate Roxby Downs could contain more copper than mines at Mount Isa.

In all, the in-ground value of the commodities at Roxby Downs is worth at least $60,000 million.

But concern over potential hazards to workers has inspired within the ALP and Australian Democrats a vehement anti-uranium posture which seriously jeopordises the future of the venture.

Public opinion is split on whether mining should take place at Roxby Downs, although predictably both political sides believe the battle is gradually swinging their way.

Politicking over the issue continues to intensify as the long-awaited indenture document comes under scrutiny for the first time.

Neither of the opposing political parties are claiming outright that they will reject the bill, pointing out they must first examine its precise details.

But at the same time both have made it plainly obvious they will not support uranium mining in South Australia unless stringent safeguards, none of which appear to have yet been adequately developed to satisfy them, are included.

Rejections of the bill will mean millions of dollars will be wasted.

Already the joint venture partners have spent more than $50 million on studies and preliminary drilling, and up to $2 million each month is still being poured into the project.

According to South Australian Government estimates, the mine, if implemented, would bring to the State direct revenue of between $500 and $700 million a year, after an initial investment of more than $1000 million.

However, the State ALP puts it bluntly: "There's more to South Australia's future than uranium."

The importance of Roxby Downs towards the State's economic future, it asserts, has been blown out of proportion.

The Roxby Downs saga has been persistently clouded by contradicting "facts" and figures by vested interests intent on either promoting or condemning its worth to the State.

From Government and Opposition parties, to anti-uranium lobbyists, wide disparities in views have been made known.

As the State Minister for Mines and Energy, Mr Goldsworthy, put it: "We cannot turn our back or walk away from the reality of what is happening around the world."

Conversely, the ALP leader, Mr Bannon says: "Surely there have been enough warning signs around the word to make us pause before entering this field."

Notwithstanding the views of the politicians, it is the people of South Australia who are split over the controversy.

In a poll recently commissioned by a television current affairs program, only a fractional majority of respondents wanted the project to go ahead, rather than see it abandoned.

The stage has been set for Roxby Downs to become the most crucial deciding factor when South Australians next go to the polling booths.

But as the Roxby Downs debate continues to rage, the South Australian Government could also soon be presented with headaches over a planned uranium mine at Honeymoon, 75km north-west of Broken Hill.

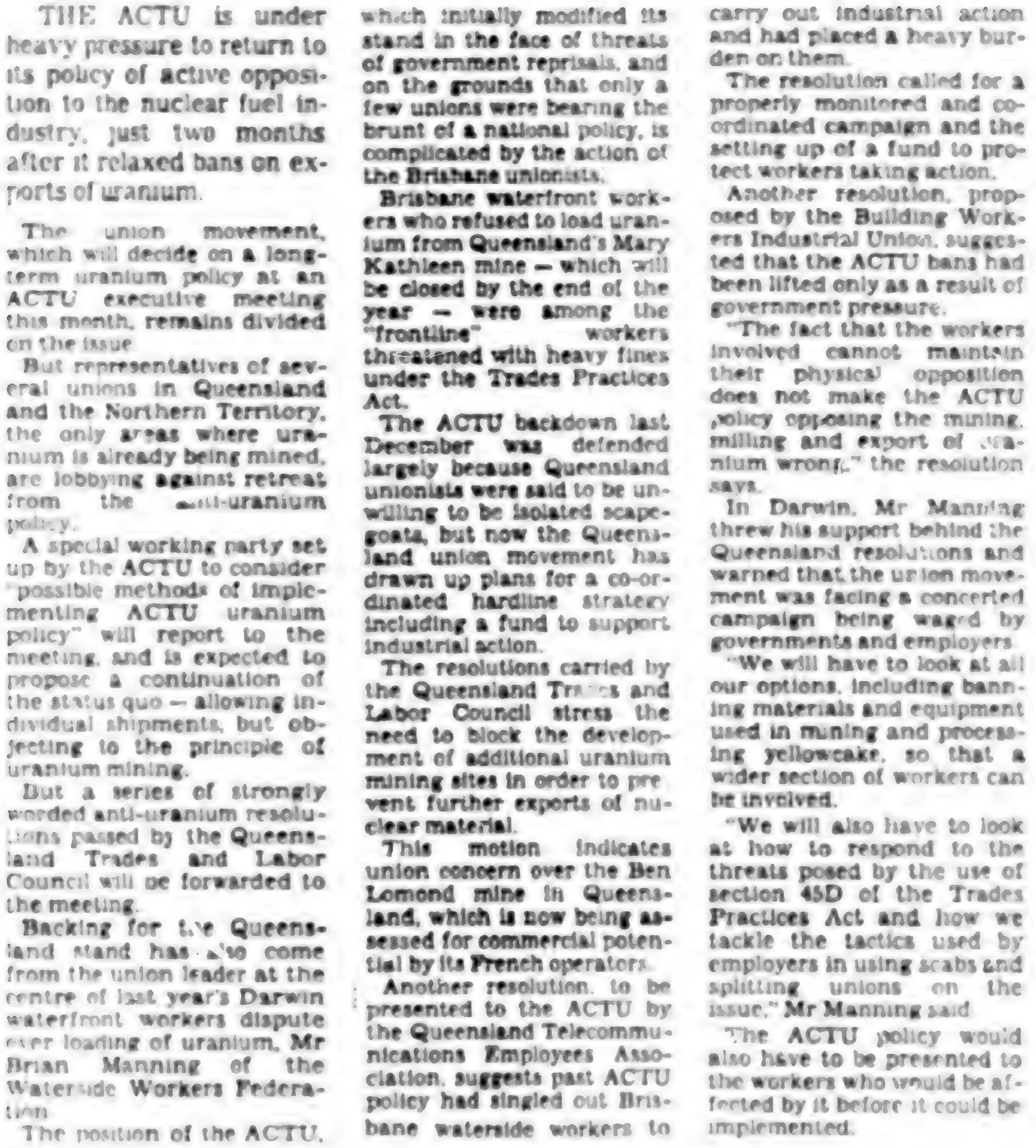
The South Australian Government refuses to publicly comment on the matter, but is known to be deeply concerned about measures it may be forced to take to ensure the project gets off the ground.

CSO: 5100/7516

ACTU FACTIONS PUSH FOR RETURN TO ANTI-URANIUM STAND

Canberra THE AUSTRALIAN in English 9 Feb 82 p 2

[Article by Nicholas Rothwell]



[Text] THE ACTU is under heavy pressure to return to its policy of active opposition to the nuclear fuel industry, just two months after it relaxed bans on exports of uranium.

The union movement, which will decide on a long-term uranium policy at an ACTU executive meeting this month, remains divided on the issue.

But representatives of several unions in Queensland and the Northern Territory, the only areas where uranium is already being mined, are lobbying against retreat from the anti-uranium policy.

A special working party set up by the ACTU to consider "possible methods of implementing ACTU uranium policy" will report to the meeting, and is expected to propose a continuation of the status quo — allowing individual shipments, but objecting to the principle of uranium mining.

But a series of strongly worded anti-uranium resolutions passed by the Queensland Trades and Labor Council will be forwarded to the meeting.

Backing for the Queensland stand has also come from the union leader at the centre of last year's Darwin waterfront workers dispute over loading of uranium, Mr Brian Manning of the Waterside Workers Federation.

The position of the ACTU, which initially modified its stand in the face of threats of government reprisals, and on the grounds that only a few unions were bearing the brunt of a national policy, is complicated by the action of the Brisbane unionists.

Brisbane waterfront workers who refused to load uranium from Queensland's Mary Kathleen mine — which will be closed by the end of the year — were among the "frontline" workers threatened with heavy fines under the Trades Practices Act.

The ACTU backdown last December was defended largely because Queensland unionists were said to be unwilling to be isolated scapegoats, but now the Queensland union movement has drawn up plans for a co-ordinated hardline strategy including a fund to support industrial action.

The resolutions carried by the Queensland Trades and Labor Council stress the need to block the development of additional uranium mining sites in order to prevent further exports of nuclear material.

This motion indicates union concern over the Ben Lomond mine in Queensland, which is now being assessed for commercial potential by its French operators.

Another resolution, to be presented to the ACTU by the Queensland Telecommunications Employees Association, suggests past ACTU policy had singled out Brisbane waterside workers to carry out industrial action and had placed a heavy burden on them.

The resolution called for a properly monitored and coordinated campaign and the setting up of a fund to protect workers taking action.

Another resolution, proposed by the Building Workers Industrial Union, suggested that the ACTU bans had been lifted only as a result of government pressure.

"The fact that the workers involved cannot maintain their physical opposition does not make the ACTU policy opposing the mining, milling and export of uranium wrong," the resolution says.

In Darwin, Mr Manning threw his support behind the Queensland resolutions and warned that the union movement was facing a concerted campaign being waged by governments and employers.

"We will have to look at all our options, including banning materials and equipment used in mining and processing yellowcake, so that a wider section of workers can be involved.

"We will also have to look at how to respond to the threats posed by the use of section 45D of the Trades Practices Act and how we tackle the tactics used by employers in using scabs and splitting unions on the issue," Mr Manning said.

The ACTU policy would also have to be presented to the workers who would be affected by it before it could be implemented.

CSO: 5100/7516

LASER TECHNOLOGY SAID TO MAKE ENRICHMENT TECHNIQUE OBSOLETE

Canberra THE AUSTRALIAN in English 16 Feb 82 p 4

[Text]

THE Australian-developed nuclear enrichment technique, supported by a $1 million Federal Government grant, is fast becoming "obsolete" and will never be economically viable, a leading environmental group warned yesterday.

Attacking the research program announced by the Atomic Energy Commission last week, the Friends of the Earth claimed that the chosen centrifuge enrichment system was being rendered obsolete by new laser technology.

A spokesman, Mr Robert Rands, said laser enrichment studies by the AEC and by University of New England scientists threatened the economics of the planned $1000 million uranium enrichment plant.

And while they would make all centrifuge and chemical enrichment plants uncompetitive, they would make production of nuclear weapons so simple that nuclear proliferation could not be controlled.

"There is no way to control the transfer of laser technology and there is every likelihood that bombs are already being made with uranium produced by this means," he said.

Western Mining Corporation, a partner in the four-company consortium planning the government-backed enrichment facility, acknowledged as early as three years ago that cheap laser enrichment could make uranium mining far less economically attractive.

The laser enrichment issue is to be raised in Parliament by West Australian Labor Senator Ruth Coleman, who has put a question to the Minister for Energy, Senator Sir John Carrick, asking if Australia could use it to produce enough highly-enriched uranium to operate a "small scale weapons system."

"In view of increasing world militarism, have any Governments been advised that Australia is developing what has been described as the best nuclear proliferation option yet," Senator Coleman is asking.

Senior government officials told *The Australian* yesterday work on laser enrichment was still in progress, but only "microgram" quantities of uranium were being enriched.

The work was not part of a weapons program. But the US was considering producing weapons-grade plutonium from spent reactor fuel by the extremely cheap laser enrichment method.

CSO: 5100/7516

BRIEFS

NUCLEAR WEAPONS OPPOSITION--CANBERRA--The world would face destruction unless the present build-up of nuclear weapons was stopped the deputy Opposition leader, Mr Bowen, said yesterday. Mr Bowen, who is Labor's foreign affairs spokesman, said that he was aware that unilateral and total disarmament was something of a "utopian dream." It was vital for Australia to have an independent capacity to defend itself from any attack, but the "madness of the absurd overkill capacity" had to be halted. Mr Bowen told the Australian Institute of International Affairs' Victorian branch that there was no justification for massive expenditure on weapons. A United Nations study had rejected the argument that the armament industry could not be dismantled without a major disruption of the world's economy. Mr Bowen said that while the world continued to spend about $500 billion a year, or $1 million a minute, on arms, food production was suffering. Half a per cent of the spending on arms would pay for all the farm equipment needed to make food deficit countries self-sufficient by 1990. [Perth THE WEST AUSTRALIAN in English 13 Feb 82 p 9]

CSO: 5100/7517

SHORTCOMINGS OF NUCLEAR PROGRAM DISCUSSED

Quetta BALUCHISTAN TIMES in English 19 Mar 82 p 4

[Excerpt]

When three boys and a woman were killed in a blaze at the Nuclear Fuel Complex (NFC), Hyderabad, the tragedy was attributed to an accidental explosion. When four to six tons of Heavy water costing Rs 2,200 a kg. leaked out from the coolant channel of the Kota nuclear plant, the Prime Minister said in parliament that most of it had been retrieved, yet the loss could run into several lakhs of rupees. When hot radioactive water gave a shower bath to technicians working at the Tarapur plant, officials said it was due to "pin-holes." Such is the state of India's nuclear power industry.

Details of major accidents are reportedly suppressed and statements which either gloss over their seriousness or are totallly misleading, are dished out. The public is thus lulled into a false sense of security. According to the police, the Fuel Complex authorities at Hyderabad burn the scrap of used materials which are collected and sold by people living in the vicinity. But why did the authorities, who are now at pains to blame the victims for the tragedy, never warned people against the potential hazards of the waste?

Low level wastes like scrap which include materials of low concentration or radioactivity are to be buried or disposed off in areas where the geologic and hydrologic conditions limit the migration of radioactivity. Apparently, NFC failed to take sufficient precautions in the March incident. Instead of burning the wastes at a desolate spot on the 100 acre complex, it was dumped at a place less than one kilometre away.

Said a high official: "Safety regulations at the NFC are a matter of established conventions," a very vague and ambiguous term which shows that the standard procedures for disposal are generally not followed. Even at Kota where the employees were not allowed to enter the unit for three days after the leakage provided enough reasons to believe that there was extremely high level of radioactivity inside the unit. Here too the authorities tried to hush up the matter although the reason for the prolonged shut-down of the unit was attributed to a 'grid fault'. Normally, it does not take more than three days to rectify a grid fault. But the unit was closed down for more than 15 days. Why?

This is not the first time that heavy water losses have occurred at the station. A few years ago, an undisclosed quantity of the liquid was wasted while unloading drums of fresh consignments. Confided some employees: "They (workes) are sore at the rising levels of radioactivity in the area around RAPP. Most of them secretly wished for transfers to other installations." In January last year, RAPP-I was virtually flooded with thousands of gallons of water sprayed from the dousing tank at the top. An unattended fuse blowdown and the misinterpretation of a warning signal led to the opening of the floodgates of the dousing tank. This is done only when the unit is on the verge of a core melt-down. Was the unit really so in January? Or was it just due to human error? If so what has been done to provide the operators with better training to meet an emergency?

Spy network: The rumours about CIA infiltration into Rajasthan Electricity Board (RSEB) has further deepened the mystery shrouding the serious accidents taking place at nuclear installations. And the question that is now being asked is if the foreign hand is responsible for the dismal performance of Rajasthan Atomic Power Plant in particular and the nuclear accidents in general. Almost all the nuclear projects in the country are behind schedule and those that are in operation never work to optimum capacity. While Japan commissions a 470 MW nuclear power plant in three and a half years, India does it in more than double that time. The Baroda heavy water plant has just resumed production after a two and a half year long shut-down due to a mysterious explosion in one of its boilers. Till today, the report of the enquiry has not been disclosed.

CSO: 5100/5637

BRIEFS

SOVIET RESEARCH OFFER--Kurukshetra, March 21 (PTI)--The Joint Institute for Nuclear Research, Dubna (Moscow), the biggest atomic and nuclear energy centre of the Soviet Union has offered to Kurukshetra University here a big scientific research protocol on the study of "super heavy elements in nature," for four years ending 1985. The offer has been made to the research group under the leadership of Dr A.P. Sharma, a senior reader, Department of Physics. Dr Sharma who claims to have recently discovered the existence of super heavy elements of charge (atomic number) around 114 in the track study of meteriotes in collaboration with Soviet scientists said that according to the protocol his research students and other scientists would continue visiting the USSR for using the facilities of heavy ion beam cyclotrons free of cost. [Text] [New Delhi PATRIOT in English 22 Mar 82 p 7]

DENIAL ON TARAPUR--New Delhi, March 16 (UNI)--The American government's understanding is that there is no threat to the safety of the Tarapur atomic power plant insofar as radio-activity is concerned, according to an American embassy spokesman here today. He was commenting on a report that the safe working of the power plant was in jeopardy because of India's inability to get certain vital spare parts from the United States. He said the embassy was trying to ascertain from Washington facts regarding the reported denial of spare parts. It is reported that the nuclear division of the American General Electric Company which originally built the reactors for the Tarapur plant warned the U.S. Department in November that if any mishap took place at Tarapur it would be solely due to India's inability to get the components from America. [Text] [Bombay THE TIMES OF INDIA in English 18 Mar 82 p 23]

CSO: 5100/7068

VITAL NEED FOR NUCLEAR ENERGY STRESSED

Karachi MORNING NEWS in English 30 Mar 82 p 9

[Text] Mr Munir Ahmad Khan, Chairman, Pakistan Atomic Energy Commission, has expressed strong faith in nuclear energy, confidence in its future and trust in human ability to control it.

Addressing the 25th regular session of the International Atomic Energy Agency at Vienna, the Chairman, PAEC said that the very viability of nuclear power was being seriously contested in certain countries and the promise of nuclear energy was being replaced by fear and its promotion was being hampered by preventive measures. He regretted that the overriding concern in this regard was to control, not to share, to deny, not to transfer; to withhold, not to provide peaceful nuclear technology to those who need it most.

Mr Munir Ahmad Khan said: "We have no other choice but to rely increasingly on nuclear power as it offers the only viable alternative for meeting the world power needs for decades to come."

Referring to the oil crisis, the Chairman pointed out that the developing countries will have to allocate 148 billion dollars for import of oil during this decade. Thus, there was hardly any doubt left that developing countries desperately need to introduce nuclear power on a substantial scale and on urgent basis.

He welcomed holding of the UN sponsored conference on promotion of international cooperation for peaceful uses of nuclear energy at Geneva in 1983. He declared it to be a timely action in the right direction.

Amendment

Mr Munir Ahmad Khan called for an amendment in the Agency's statute so as to provide better representation to the least represented areas of Africa, Middle East and South Asia. He said that these countries constitute nearly 40 percent of the membership of the Agency but had a little over 20 percent of the seats on the Board of Governors. He proposed that to begin to redress the injustice a modest increase of one seat for Africa and one for the Middle East and South Asian regions should be made. He said that under-representation was one reason why the Agency was not able to communicate effectively or understand the views of the developing member states. He said we can no longer ignore the increasing presence and the genuine aspirations of the developing countries who want to play their legitimate role in the organization.

About the technical assistance of the Agency, he said that there was a growing feeling that technical assistance was being relegated to the background and attention was being focused primarily on the regulatory activities. He supported the safeguards functions of the Agency but said that equal importance should be given to the technical assistance programme of the Agency as these two functions constituted the two pillars of the organization. He stressed that funds for technical assistance should be provided through predictable and reliable sources in the same way as for safeguards activities.

Assurances of Supply

The Chairman referred to the establishment of Committee on Assurances of Supply last year by the Board of Governors and said that this committee could help us to establish acceptable norms arrived at through negotiations and not under duress for the promotion and regulation of nuclear energy in the world. He pointed out that the monopoly in the nuclear know-how materials and services was eroding and a system based on cooperation and interdependence must be evolved. He stressed that irrevocable safeguards must be linked with the equally irrevocable supply agreements. He emphasised that in order to build an atmosphere of trust and confidence, all contracts and treaties under safeguards must be fully respected.

The Chairman reiterated that Pakistan was making progress in the peaceful applications of nuclear energy for meeting the growing needs for economic development. Comparing the costs of power generation from a nuclear plant and oil-fired plant, he said that economic advantage of nuclear power was overwhelming. He mentioned that necessary supporting facilities like trained manpower, equipment, material and services were being set up to establish a large nuclear power plant. He also referred to the progress made by the Pakistan Atomic Energy Commission for the establishment of new centres for nuclear medicine and agriculture.

China's nuclear lobby appears to be winning the battle to be allowed to push ahead with plans to develop a nuclear industry. But progress will be slow. And it is most unlikely that development of the industry will have moved far by the end of this decade.

From a long-term point of view, nuclear power stations will be built in China, according to Li Rui, China's Vice-Minister for the Power Industry. But he added that no nuclear power stations were expected to go into operation before 1990.

Many questions remain to be resolved before China can enter into serious negotiations with overseas suppliers of nuclear technology, and not the least of these is what level of foreign involvement the Chinese wish to have in their nuclear industry.

"China is now able to design, manufacture and build nuclear power stations independently," the Vice-Minister concluded.

CSO: 5100/5638

BRIEFS

NUCLEAR SUPPLIES TO PAKISTAN--A United News of India report says nearly 11 countries have supplied equipment to Pakistan for building its nuclear potential. The agency quoting a U.S. congressional committee says Swiss and French firms supplied Pakistan with parts and equipment for enrichment project. West Germany, Italy, Spain and Norway were amongst the countries who were reported to have supplied nuclear potential material to Pakistan. [Text] [BK081605 Delhi Domestic Service in English 1530 GMT 8 Apr 82]

CSO: 5100/5639

NATION DEVELOPS TECHNOLOGY TO MAKE NUCLEAR FUEL

OW051435 Taipei CHINA POST in English 2 Apr 82 p 10

[Text] The reserach center of the National Science Council under the Executive Yuan has successfully developed a new technology for making nuclear fuel pellets of uranium dioxide. The development will be looked to as the benchmark for process design in the workings of the nation's future manufacture of nuclear fuel at a future pilot plant.

The research center has studied the up-to-date technology of making nuclear fuel from uranium dioxide (UO2) in order to strengthen the self-reliance of the ROC's nuclear industry. According to a report released by the center, the newly developed manufacturing process of uranium dioxide from ammonium uranium carbonate (AUC) is superior to the conventional one because it is simpler. The report said that the powdered uranium dioxide manufactured from ammonium uranium carbonate has an excellent fluidity and can be directly compressed into fuel pellets without going through the process of prepressure and other treatment. The pellets' consumption can reach 92 to 98 percent in accordance with international specifications.

According to the report, the up-to-date technology of manufacturing uranium dioxide from ammonium uranium carbonate has been classified as confidential by the advanced countries in nuclear development. Therefore the results of research in the field have provided a lot of unpublicized data on manufacturing uranium dioxide nuclear fuel pellets from ammonium uranium carbonate. The report said this research experience will be looked to as a reference in the process design the establishment of the ROC's nuclear fuel pilot plant.

CSO: 5100/2129

CNEA CHAIRMAN BRIEFS GALTIERI, OTHERS ON NUCLEAR PLAN

Buenos Aires LA PRENSA in Spanish 25 Mar 82 p 6

[Text] Last night, at the headquarters of the National Atomic Energy Commission (CNEA), the president of the nation attended a briefing given by the chairman of the entity, Vice Adm Castro Madero, on the subject of the Argentine nuclear plan.

Gen Galtieri later held a brief dialog with reporters.

Castro Madero Briefing

The CNEA chairman first explained that the nuclear plan has four main objectives. The first one is to use nuclear energy instead of that of other origins, inasmuch as it is more feasible for the country. The second is to achieve total self-sufficiency in the nuclear field. The third is to develop all types of utilization of nuclear technology: electricity, propulsion, medicine, industrial applications, etc. And the fourth is to insure the nation of protection for the population and the environment against the possible harmful effects of nuclear radiation.

These main goals are expressed in a set of individual and policy objectives established by the National Executive Branch through Decree 309/77.

Six Programs

Castro Madero explained that, to fulfill those goals and policies, the CNEA is carrying out six programs.

The purpose of the nuclear powerplants program is to install the latter in the country, with increasing participation by national science, technology and industry. As part of this, he noted that the Atucha I Nuclear Powerplant, put into service in 1974, has a production which ranks it among the most efficient and safe in the world, and last year produced 8 percent of the net energy supplied by the public system. He also reported that the construction work on the Embalse Nuclear Powerplant is now in its final phase, and that its reactor is expected to become critical before the year's end. Meanwhile, the construction work has begun on the Atucha II Nuclear Powerplant, in which, for the first time, an Argentine company will be responsible for the direction and execution of the project. The nuclear plan calls for three more powerplants up until 1997, and studies for the first of them have already begun.

The purpose of the second program is to provide the supplies for the nuclear powerplants, with maximum participation by national science, technology and industry. Argentina is bent on achieving self-sufficiency in the area of fuel and heavy water for the reactors. The current uranium reserves, 30,050 tons, meet the needs of the six reactors stipulated in the nuclear plan for 30 years of their useful life. The exploration work is continuing, in order to increase the reserves, with a view toward future needs. The uranium production is under way at present in three plants (Malargue, Don Otto and San Rafael); and there are plans for the building of three more, which will gradually replace the previous ones. These three will be exploited by private companies; they are Los Gigantes, in Cordoba, and Sierra Pintada, in Mendoza.

Still as part of this program, the construction and putting into operation of the Alta Cordoba uranium dioxide concentrate conversion plant are in the final phase. It has a production line of German origin, and another developed with native technology.

Already built is the special alloys factory which will produce the zircaloy used in the fuel elements, and the construction of the factory to produce zircaloy tubes for them is progressing. On 2 April, the Ezeiza Nuclear Fuel Elements Factory will open, and will supply the Atucha I and II nuclear powerplants in Embalse. Its production may increase to meet the demand from the six powerplants planned thus far. This plant will be operated by a native company with mixed capital, the majority of which is private.

As for heavy water production, there is currently under construction the Arroyito Heavy Water Industrial Plant in Neuquen Province, with an annual capacity of 250 tons, which will enable Argentina to achieve self-sufficiency in the moderator-coolant for its power reactors.

Moreover, with regard to the subsequent portion of the fuel cycle, the Ezeiza Chemical Processes Laboratory is in an advanced state of construction. It will develop, on a pilot plant scale, the technology for reprocessing irradiated fuel, which will make it possible to recover the plutonium generated in the nuclear fuel thus allowing for an expansion of the country's nuclear energy potential.

Insofar as the final products of the fuel cycle are concerned, geological and feasibility studies have been started for the building of a nuclear waste storage facility 50 kilometers from the Chubut locality of Gastre; which will make it possible to dispose in a safe and definitive manner of the highly active products which remain as an end product from the fuel reprocessing.

The purpose of the third program is to provide radioisotopes and intense radiation sources to meet the requirements of the national demand and also those abroad. Last year, the national demand increased 50 percent, and CNEA is still cooperating with the provincial governments to facilitate the use of radioisotopes and radiation throughout the entire national territory. The Commission also renders services at the request of third parties, as in the case of the hydrological study of the Parana in Las Palmas. It operates an irradiation plant in Ezeiza that provides radiosterilization services, mainly to the pharmaceutical industry and for surgical materials. In 1981, the first sealed source of cobalt-60 was manufactured in the country.

The purpose of the program for radiological protection and nuclear safety is to insure the protection of humans and the environment against radiation. For this purpose, regulations have been prepared, there has been participation in the pertinent international agencies, activities involving radio-sanitation control and inspection are carried out, and nuclear safety studies are made for the facilities, while there is collaboration with universities and other specialized institutions.

This work also includes the studies for the disposal of end products of the fuel cycle.

In the research and development program, the goal of CNEA is to attain mastery of nuclear technology,and consolidate a scientific and technical structure with the capacity to produce innovations and carry out activities in the area of unconventional energy sources. Among other activities, Vice Adm Castro Madero emphasized the construction of the TANDAR heavy ion electrostatic accelerator, which is in a very advanced stage, and that of the RA-6 reactor for the nuclear engineering course which will begin during this year's term at the Balseiro Institute in Bariloche. He also cited the country's own development in solar energy, and the agreement concluded with EPEC [Cordoba Provincial Power Company] for the construction of a building to be used to demonstrate types of technology for utilization of solar energy.

The purpose of the sixth and final program, involving management, training and backup, is to direct the action of the National Atomic Energy Commission, to train the personnel and to supply the necessary infrastructure. Included within this are the activities of the Balseiro Institute, where the nuclear physicists and engineers are trained, and the Atucha training center, where engineers are trained for the operation and maintenance of nculear powerplants. CNEA has organized courses for graduates on methodology and application of radioisotopes and, in cooperation with the University of Buenos Aires, postgraduate courses in radiological protection and nuclear safety, as well as nuclear engineering.

This program also calls for activities associated with international cooperation, whether through bilateral agreements or through the auspices of the International Atomic Energy Agency and the Inter-American Nuclear Energy Commission. As part of this activity, Vice-Adm Castro Madero underscored the major agreement on cooperation with Peru, thanks to which a nuclear research center is being constructed in that country, including a 10 megawatt reactor with its attached facilities, and a radioisotopes production plant, both supplied by Argentina.

In conclusion, he cited the policy of training human resources implemented by CNEA, which will provide it with highly qualified professionals; this being a guarantee of continuity in its activity, insuring that its goals can be fulfilled.

Dialog

Following is the dialog which the president held with the newsmen detailed to the location:

Reporter: May we be given your impression of Vice Adm Castro Madero's explanation?

President: Vice Adm Castro Madero has the quality of being a good teacher, in addition to having a thorough knowledge of the subject from his years spent on it and his accumulated experience. I came to visit and learn about the progress of the Argentine nuclear plan, and the purpose has been served.

Reporter: Argentina has a project planned in the nuclear field. Will it be carried out?

President: It has a nuclear plan in progress, which is not for this year; it has already taken several years, it is continuing its progress and it will be carried out.

Reporter: Mr President, is it an irreversible decision to purchase enriched uranium from the Soviet Union, regardless of the opinion of the countries which supplied it previously?

President: Argentine decisions are Argentine decisions.

Reporter: In connection with the measures to put the budget on a sound footing, would they affect self-sufficiency in the area of fuel which Argentina has planned?

President: The National Atomic Energy Commission, together with the rest of the state entities, will make its contribution to the budgetary restrictions of 1982, but this will by no means have any great effect on the plan that is under way.

Reporter: In the view of the president of the nation, what is the essential significance of the National Atomic Energy Commission to our country's future?

President: I have visited the Ministry of Labor, the Ministry of Foreign Relations, the Pediatric Hospital and the National Library; and today I have come to visit the National Atomic Energy Commission. This should give the gentlemen of the press some notion of the importance that the president of the nation attaches to this plan, for the present and future of the entire Argentine community.

Reporter: Mr President, apart from the message of the Military Junta on the occasion of the sixth anniversary of the process, could you make some comments to us about this process, and about the future that it will have to confront?

President: Forgive me, but today I have come to visit this institution, and we shall talk about the Argentine nuclear plan.

Reporter: Would you care to add anything else in that regard?

President: I am very pleased by what has been accomplished in recent years by the human team comprising the National Atomic Energy Commission. I believe that it is a guarantee for the country and a source of pride for the nation and for all Argentines that this group of important Argentines, numbering hundreds and several thousands of Argentines, are performing this work with the enthusiasm and zeal which they are evincing, for the benefit of all, lending prestige to the nation, and lending prestige to the blue and white in all international forums.

Reporter: Are they scientific researchers who have remained in the country, Mr President?

President: Without any doubt.

2909
CSO: 5100/2126

BRIEFS

NUCLEAR WEAPONS QUERY--Bermuda should know exactly where it stands in America's defence plans, P.L.P. Shadow Home Minister Mr. Eugene Cox said yesterday. Mr. Cox also wanted to know whether any nuclear weapons were stored on the Island. His question came during yesterday's House of Assembly debate on the Budget, after the Hon. Sir John Sharpe, Minister of Home Affairs introduced items including defence. "It seems to me that we should know what our function is within America's defence set-up," Mr. Cox said. "I suspect the secrecy that exists concerning their installations. I would have thought someone in high office in our country should have knowledge--for example, do we house nuclear weapons? Being so close to America, I would have thought that we might be their first line of defence, and that would make us a very vulnerable island," Mr. Cox said. Sir John Sharpe, said Bermuda played an important part in U.S. defence preparations, mainly in the surveillance of submarines. "But to my knowledge, there are no nuclear weapons stored here," he said. "Government representatives and Opposition members did go on a tour of the American base some time back, and it gave use quite an insight, but we can always arrange to go there again if wanted." [Hamilton THE ROYAL GAZETTE in English 10 Mar 82 p 5]

CSO: 5100/7518

BRIEFS

COMPLAINTS OVER NUCLEAR AGREEMENT--Deputy (Ademar Coutinho), a member of the Brazilian Democratic Mobilization Party--PMDB--has cited press reports that although Brazil has already spent more than $1.5 billion in the uranium enrichment process based on jet nozzles developed under the Brazilian-FRG nuclear agreement, it has not started operating yet because of technical difficulties. Meanwhile, he said, the FRG refuses to furnish us with a substitute able to make energy generation feasible, for which the total cost has already surpassed $40 billion. [From the Congressional Report] [Text] [PY300211 Brasilia Domestic Service in Portuguese 2200 GMT 29 Mar 82]

CSO: 5100/2128

FRENCH NUCLEAR POWER PLANTS UNDER CONSIDERATION

Tel Aviv HA'ARETZ in Hebrew 14 Mar 82 p 11

[Article by 'Eli 'El'ad: "The Nuclear Hour"]

[Excerpts] Stories were published in Israel in connection with the visit of French President Francois Mitterrand to the effect that Israel would purchase its first nuclear power plant in France. It is believed that the topic was dismissed in the course of the visit and occupied a prominent place in those talks.

The question of when Israel would finally enter the nuclear power age has been on her agenda for the past two decades. In recent years, the topic comes up more and more frequently. No long ago it came up with renewed urgency following the signing of the agreement between the United States and Egypt for the delivery of American nuclear power plants to our southern neighbor. Even before the advisory committee (one of several appointed over the last two decades to examine the various aspects of a nuclear power plant) headed by the president of the Technion, Gen (Res) Amos Horeb, was tasked with looking into the matter, including the possibility of a plant of Israeli manufacture, it indicated in its conclusions that the latter approach was economically unfeasible. In view of the protracted political freeze on the question of the supply of nuclear reactors from the United States--after a letter of intent was signed in 1977 between the Israeli Electric Corporation and the American Westinghouse Corporation, which was never implemented due to political problems connected with Israel's non-agreement to international supervision of her reactors--and in the wake of President Mitterrand's visit, there is an increased desire to learn more about the French reactor.

France is considered a nuclear power today in everything having to do with the generation of electricity. This country--which from an energy point of view is similar to Israel since she has few natural resources for the generation of power and is dependent on imports--entered the realm of nuclear power production at a very late stage. Today France is considered to have the world's most ambitious program for the nuclear generation of electricity and to be the leader in several areas of the application of nuclear technologies to power production, for example, her activity in the area of breeder reactors.

As was reported in the course of Mitterrand's visit, Israel has been in contact with France concerning the delivery of a nuclear power plant. The energy minister admitted that such negotiations were under way, which were defined by him as preliminary, and added that there are also contacts with other countries. France is not a signatory of the nuclear non-proliferation pact, because she believes that it also gives a monopoly to the United States and to the Soviet Union in the peaceful uses of atomic energy (the generation of electricity). It is therefore believed that France may have a different attitude toward the requests by non-signatories of the pact for the supply of nuclear reactors, and that this is the main reason why the agreement that was achieved at the time between the American Westinghouse Corporation and the Israeli Electric Company for the delivery of two 900 megawatt reactors was never implemented.

As far as is known, the French reactor being considered by Israel--if the contacts ever get off the ground--is the reactor of light water and enriched uranium of the pressurized water variety (as opposed to the boiling-water type developed in the United States by General Electric) with an output of 900 megawatts. The most interesting feature according to this report is that what is being discussed is a reactor similar to the one that the Israeli Electric Company preferred in 1976/7 and about which negotiations were held and agreement reached with the American Westinghouse.

Professor Dar: What Is Desirable and What Is Available

The nuclear physicist Professor 'Arnon Dar, who serves as dean of the physics faculty at the Technion and is considered one of the most prominent among those who have been "sounding the alarm" within the scientific community in Israel, contends that Israel wasted many good years and many opportunities for entering the nuclear power plant era, and that he hopes that Israel will not miss out on the present good opportunity, if it should turn out to be so.

"The best reactor for Israel," says Professor Dar, "is the reactor of the Canadian CANDU type, using heavy water and natural uranium. This, because these reactors have political, technological and economic advantages. Economically they produce nuclear electricity that is somewhat cheaper than other nuclear electricity, while there is no need to shut down the reactor (for 2 or 3 weeks every year) to replace the nuclear fuel rods. From a technological point of view they are considered safer, the required fuel is more readily available on the workd market--and that also has political advantages. In addition, the Canadian reactor is produced in units of 600 and 750 megawatts of electricity, which are more easily integrated into the Israeli electrical net, which is small and relatively condensed and is not assisted by reciprocal ties to the energy nets of the adjacent countries. Canada's readiness to supply reactors of the CANDU type is not clear."

"Given a lack of readiness to do so and because of Israel's vital need to begin production of nuclear electricity, the opportunity must be seized--if it should present itself--to purchase a French nuclear reactor," Professor Dar says. "This despite the fact that the purchase of a nuclear reactor in France means the creation of Israeli dependence on a supply of enriched from France. Israel and France have a certain history of violation of contracts like the Cherbourg boats, the 50 Mirage planes that de Gaulle cancelled delivery of after the Six-Day War, etc."

"I hope," 'Arnon Dar adds, "that the delivery of a nuclear reactor for power production in Israel, if it comes off, would not give France the green light to supply nuclear technology to oil-rich Arab countries that have no objective need for nuclear research reactors or nuclear reactors for the generation of electricity. It should also be hoped that along with the French option, if it should develop, Israel should not abandon the Canadian option, even if it would involve the opening of Israeli reactors to international inspection starting from the moment the first nuclear power plant was turned on."

9794
CSO: 5100/4713

SCIENTISTS ARGUE OVER FUSION EXPERIMENT'S FEASIBILITY

Jerusalem POST in English 26 Mar 82 pp 1, 8

[Article by Charles Hoffman]

[Text]

The former director of Israel's Atomic Energy Commission, who advised the government not to put any money into an experimental nuclear fusion reactor, yesterday rejected claims made by the developer of the reactor as "extravagant," adding that such claims are "laughed at" by the scientific and technological community.

Prof. Yisrael Dostrovsky, head of the Energy Research Centre at the Weizmann Institute, told *The Jerusalem Post* in an interview that "whenever I see claims that an invention 'will revolutionize the world,' it has the opposite effect on me. No serious person would make such statements. This is the same type of claim made about the Meridor-Berman invention."

Dostrovsky headed a special committee set up by the Energy Ministry last December to examine the scientific potential of a new type of fusion reactor that the International Nuclear Energy Systems Company (INESCO) of California seeks to develop in Israel. The committee was unanimous in concluding that the proposed new reactor would not succeed in setting off a continuous, self-sustaining fusion reaction — a feat that has never been accomplished.

Nuclear fusion involves joining, or fusing, the nuclei of two types of hydrogen atoms under conditions of extreme temperatures (about 100 million degrees C.) and pressures. If enough fusion reactions are brought about in a confined space, enormous amounts of energy are released, in a process basically similar to energy production on the sun or the awesome destructive power of the hydrogen bomb.

Since the hydrogen "fuel" for the reactor is available in virtually unlimited quantities, fusion is regarded as ultimately a much cheaper form of nuclear energy than that produced by the fission, or splitting, of uranium atoms.

Experiments attempting to generate energy by a self-sustaining fusion reaction, called "ignition", have been made over the last 30 years in several countries, at a cost of billions of dollars.

Dostrovsky's committee recommended against giving government aid to the INESCO project, and also concluded that Israel should not invest in fusion research until more progress is made in studies now under way in the U.S., Europe, Japan and the USSR.

The Energy Ministry recently decided to allow INESCO to develop its reactor in Israel, but said that it would get no government aid. Negotiations are to begin soon to determine a site for the reactor.

The former head of Israel Aircraft Industries, Al Schwimmer, represented the company in Israel and promoted the idea to the government. Also involved on the Israel end are Elkana Gali, also formerly of the IAI, and Aluf-Mishne (Res.) Ya'acov Nimrodi who recently achieved prominence when, on a British TV programme, he advocated attempting a military coup in Iran.

The Israeli promoters are now abroad and could not be reached for comment.

Energy Minister Yitzhak Berman justified the decision as a promising contribution to the development of the country's nuclear infrastructure and as a source of employment to dozens of Israel scientists and technicians, many of whom might otherwise seek jobs abroad. The ministry's chief scientist, Prof. Haim Elata, is also sceptical that the INESCO device will succeed, but said that it is worthwhile for the state to give it a chance to try for what could be a "major scientific breakthrough."

Dostrovsky and Prof. Arnon Dar, a Technion physicist, both doubt whether the government will be able to confine its aid to allocating a site for the plant, which will cover about 80 dunams. They feel that if funding for the project falters after the plant is operating, the government will come under pressure to keep it going.

Dostrovsky anticipated that the major pressure to fund the plant would not come from demands to prevent a scientific brain drain, but from "what to do about the poor janitors" who would lose their jobs. The plant is expected to employ several hundred people, most of them in non-technical jobs.

Dar last month heard a detailed explanation of the proposed reactor from the INESCO head, Dr. Richard Bussard, and his executive vice-president Dr. Rami Shani. He, like Dostrovsky, concluded that the idea is based on incorrect theories and would not attain ignition. Dar is concerned that the commotion created around this supposedly "revolutionary" device will create the illusion that Israel is on the verge of an energy breakthrough that would remove its dependence on oil.

Dar said that Israel urgently needs to start building an energy-generating atomic reactor that operates on the conventional process of nuclear fission, adding that the country is in any case years behind in this field.

He said that the government has no business getting involved with a company that is not a leader in the fusion field, although it is staffed by competent scientists. The fusion field is today dominated by government laboratories, universities and international governmental research groups.

In reaching its conclusion to reject government aid to the project, the Dostrovsky committee took into account an evaluation of the proposal made by the U.S. Department of Energy (DOE), which also turned down an INESCO application for aid. Dostrovsky said that DOE too based its judgement on scientific and technical grounds. When INESCO appealed the first rejection, he said, the DOE bent over backwards to set up a review panel with scientists the company believed were sympathetic to their approach. But the review panel too turned INESCO down.

Dostrovsky said that he does not personally know Bussard. But he is miffed at Shani for recently causing a brain drain of Israeli nuclear scientists, recruiting them to INESCO by offering high salaries.

After many years and billions of dollars spent on experimenting with a variety of ideas for fusion reactors, research in the field may be approaching a transition from the stage of demonstrating scientific feasibility to the stage of engineering and planning commercial reactors. A recent study of the fusion field by a U.S. congressional subcommittee concluded that ignition will be attained within about five years.

Even if ignition is reached during that time — a point on which Dostrovsky is sceptical — formidable technological obstacles stand in the way of building fusion reactors that can generate enormous quantities of cheap electricity. One of the main problems concerns the radiation generated in the self-sustaining fusion process, which will contaminate and damage the materials from which the reactor is constructed.

Experimental reactors built today attempt to take into account engineering problems to be encountered in the future after ignition is achieved. This is one of the reasons they are so large — an advance Tokamak-type reactor at Princeton University is about 10 metres high and 10m. in diameter — and costs hundreds of millions of dollars.

INESCO's idea is to sidestep the engineering problems inherent in large-scale reactors built to last 30 years, and to build a small (about 2.5m. by 2.5m.), relatively simple device whose main purpose it is to reach ignition in a few years. Even with its "modest" goals, the INESCO project is supposed to cost about $180m., according to the Energy Ministry. (Bussard claims that it will cost about $100m. or less.)

Given such large sums, which have never been mobilized by private investors for a fusion reactor project, the question inevitably arises: Why would private investors risk so much money on something with an uncertain outcome and an even less certain timetable?

One factor is evidently the tax deductions available in the U.S. to investors willing to take a risk on research and development projects. A sum such as $10m. deducted from an investor's income amounts to a significant reduction in the tax burden.

Scientists familiar with the world of high-technology investment in the U.S. point to another possibility: it sometimes happens, they say, that companies developing a new device or process will generate a lot of publicity about their invention and make far-reaching claims to attract investors with large sums to spend on risky ventures. For certain types of investors, the very uncertainty in the invention enhances its attractiveness.

As the publicity machine grinds on in the initial stage of development, money pours in and the company's stock skyrockets. When it reaches six or eight times its original value, the scientists say, the initial investors pull out, making a big profit. Their calculations are purely short-run returns of at least several hundred per cent on their initial investment.

The scientists said that they did not know the investors involved in the INESCO reactor, nor could they speculate on their economic motivation. But they expressed hope that this project would not be the victim of speculation.

The Energy Ministry spokesman said that the ministry is aware of the speculative temptations inherent in high-risk, high-technology enterprises. He said that in negotiating with the company, the ministry will make sure that funding will be available to see the project "through to completion," and will demand "appropriate guarantees" to prevent investors from taking a quick profit and leaving the government "with a white elephant on its hands."

Another question that has arisen is why INESCO is interested in setting up the reactor in Israel instead of in the U.S. A scientist familiar with the project said that the company probably wanted to avoid the expensive and time-consuming bureaucratic process required there to get a permit to build a fusion reactor, which would be an unprecedented venture for a private company.

A former American lawyer with experience in environmental law said that nuclear energy projects are often tied up for years in a lengthy process of applications, appeals and litigation in federal and local government. Although nuclear projects in Israel must go through the National Planning Council and the Atomic Energy Commission for approval, it is easier to push projects through here than in the U.S., especially if they have governmental backing, he suggested.

Scientists familiar with the project said that the tie with Israel would give the company access to the country's nuclear know-how — if only indirectly — by hiring locally-trained manpower — and would make it more attractive to Jewish investors, who might be persuaded that they are helping Israel solve its energy problem. "The tie-in with Israel makes a good promotional gimmick," one scientist said.

In the early stages of fusion experiments in the 1950s, it was thought that fusion would be a source of "clean" nuclear energy, in contrast to the "dirty" radioactive hazards inherent in fission reactors. But later experiments showed that the process that creates energy in fusion — the release of high-speed neutrons from the collision of the hydrogen nuclei — also causes the materials in the reactor to become radioactive.

Dostrovsky said, however, that until a reactor reaches the stage of ignition, the radiation danger is insignificant and requires no special precautions. Only after fusion reactors begin to operate continuously will radioactivity be a major problem. Nevertheless, these and other potential hazards should be taken into account in experimental models as well, since the gas used in advanced experiments, tritium, is radioactive and can escape into the atmosphere.

The INESCO reactor is based on a "throwaway" concept, which means that if and when it achieves ignition it will be able to operate for only a month or so before radiation makes the reactor materials unusable. Since the reactor is small, INESCO reasons, it is economically feasible to "throw it away" and replace it with a new one. Thus once ignition is reached, the INESCO reactor will have to be constantly replaced, which creates a problem of disposal or storage of radioactive materials.

The head of the Energy Ministry's nuclear power division, Amnon Einav, said that the hazards posed by the INESCO reactor are minimal, and technological solutions can readily be found. "The biggest safety problem is having several tons of metal dropped on someone's foot when the reactor is taken out and replaced," he said. The contamination level of the materials is expected to drop significantly within five to six years, he claimed.

But Dostrovsky said that radiation levels in the discarded material may remain high for many decades, and that no one can say now what the actual hazards will be until fusion reactors reach ignition and operate for a period of time.

The U.S. congressional study concluded that while fusion does appear to hold fewer radioactive risks to those working with the reactor and to the environment, there is enough hazardous potential to warrant close study of the problems and considerable caution in planning the siting and operation of fusion reactors.

Dar is worried that Israel lacks appropriate legal standards for protecting the public against the hazards of fusion reactors. The spokesman of the Atomic Energy Commission said, however, that once the project reaches the implementation stage, it will have to pass the scrutiny of the nuclear safety standards section of the commission.

Even before it reaches this stage, however, the company will have to submit an environmental impact statement to the National Planning Council when it applies for a permit to build on a particular site. The Environmental Protection Agency will evaluate the statement and pass on its recommendation to the council, which has the ultimate authority to approve or reject the application.

Einav said the plant can be built almost anywhere in the country and does not require large amounts of water for cooling, since it is not a power plant. Naturally, he said, it should be sited away from population centres due to the radiation dangers.

CSO: 5100/4714

CAMEROON

BRIEFS

WEST GERMAN URANIUM EXTRACTION--West Germany is providing technical assistance to Cameroon to explore possibilities of extracting uranium in the Poli region in northern Cameroon. The German Agency for Geo-science and Raw Materials, Bundesanstalt für Geowissenschaften und Rohstoffe (BGR) has already carried out initial research in the area and said that uranium could be extracted on an economic basis. Three West German scientists have now been sent out to make further assessments of the extent of the reserves and to develop a joint German-Cameroon project. In return for West German assistance, Cameroon has agreed to declare the project region a "closed area" for third parties and to give German firms first option on concessions. The German Development Ministry, which is providing DM2.2m. for the first stage of the project, says that Cameroonians would be trained so that in future Cameroon would be able to extract further resources without foreign assistance. [Text] [London WEST AFRICA in English No 3372, 22 Mar 82 p 809]

CSO: 100/5638

BRIEFS

URANIUM DEPOSITS--Large deposits of uranium have been found in Gongola and Borno states. The mineral has also been discovered in the Gombe area of Bauchi State, according to the Minister of Mines and Power, Alhaji Muhammad Ibrahim Hassan. [Text] [London WEST AFRICA in English no 3372, 22 Mar 82 p 809]

CSO: 5100/5638

NUCLEAR CAPABILITY FOR NEW FIELD GUN DENIED

LD282154 Johannesburg International Service in English 2100 GMT 28 Mar 82

[Text] The chairman of the South African Armaments Manufacturing Corporation, Commandant Piet Marais, has denied American allegations that South Africa developed the G-5 supergun to shoot nuclear warheads. The allegation was made by the Africa subcommittee of the American House of Representatives in a report published in Washington last week. He says the G-5 has no such properties and no request has been received from the South African defence force to develop a gun that can fire nuclear warheads. He says this would in any event not be in line with declared South African policy to use nuclear power for peaceful purposes only.

Commandant Marais says the G-5, which is generally regarded as the most modern 155-mm field gun in the world, is capable of firing projectiles accurately up to 40 percent further than any other comparable weapon of its class. The gun, although of South African origin, was dependent for its design on computer facilities in Canada and the United States and in the process the arms boycott had to be circumvented. He says allegations that it was based on American G-4, which South Africa was said to have had access to through the American Space Research Center, were completely unfounded.

Commandant Marais also denied that ARMSCOR cooperated in any way with the American Central Intelligence Agency or any security network to avoid the arms boycott. A Canadian citizen Dr Gerald Bull has been sentenced to prison for his cooperation with ARMSCOR and South Africa in a manner that was contrary to the arms boycott against South Africa. A courtcase is also under way in the United States against the suppliers of castings used for the manufacture of the first ammunition for the G-5. Commandant Marais said a plant for the manufacture of the G-5 guns has just been completed in Pretoria.

CSO: 5200/5636

BRIEFS

URANIUM EXTRACTION--Tunis, 3 Apr (TAP)--The Maghreb Tunisian Company for Chemical Industries and the French uranium company Pechivey Ugine Kuhlmann yesterday signed an agreement for the exploitation of a method of exploring for and extracting uranium through the use of phosphoric acid. The method, which was developed by Gardini of the United States and the ABK of France would enable the Tunisian chemical conglomerate to extract uranium through the use of phosphoric acid produced by Tunisia. The construction of a factory for the extraction of uranium will begin in 1983 in Qabis in southern Tunisia, and it will become operational in 1985. It will produce 120 million tons of uranium ore [al-uraniyum al-tabi'i] annually. The agreement will expand cooperation between the Maghreb Tunisian Company for Chemical Industries and the ABK in the field of nuclear chemistry and will enable Tunisian cadres and technicians to acquire this new technology. [Text] [Tunis TAP in Arabic 1015 GMT 3 Apr 82 LD]

CSO: 5100/2129

NUCLEAR FUSION RESEARCH IN SWITZERLAND

Zurich DIE WELTWOCHE in German 17 Mar 82 supplement p 9

[Text] Through the agreement on cooperation between Switzerland and the European Atomic Energy Commission (Euratom), Switzerland has a substantial share in major all-European nuclear fusion projects such as JET (Joint European Torus) and the future NET (Next European Torus).

Within the framework of this international collaboration, Swiss nuclear fusion research is concentrating predominantly on the magnetic confinement process. The bulk of Swiss basic research in the area of plasma physics is being carried out at the Centre de Recherche en Physique des Plasmas (CRPP), which is connected with the Lausanne ETH [Federal Technical School]. At this center, in addition to theoretical studies on plasma stability a tokamak experiment (TCA) is also in progress as a part of the Euratom/Switzerland association agreement.

The objective of this complex facility is to test and study the efficiency of a new method for plasma heating--one of the chief problems of current nuclear fusion research. The diagnostic methods to be used for the TCA tokamak are being developed by the CRPP in cooperation with other Swiss university institutes--among others the Physics Institute of the University of Freiburg. In order to measure the temperature of the nuclei in hot plasma, the CRPP is developing a "laser thermometer." Other plasma-physics research projects are also going on at the University of Freiburg.

There is still a long way to go from controlled nuclear fusion in the plasma to the fusion reactor as an energy-generating machine. Strong magnetic fields are necessary for the plasma confinement, and to do this special superconducting magnet coils must be developed. In a joint effort between the Swiss Institute for Nuclear Research (SIN) and Brown Boveri & Cie (BBC), Baden, a large superconducting coil about 4.5 meters in diameter is being manufactured which upon being grouped in radial fashion with five other coils--within the framework of an IEA [International Energy Agency] project in the United States--is supposed to produce an annular magnetic field of about 8 teslas (80,000 gauss). To this end, SIN can bring to bear its extensive experience in the area of superconductor engineering and cryogenics.

By way of the large tokamak "JET" project being financed by Euratom, Swiss industry is demonstrating its technical capabilities. Evidence of this is the fact that so far 5.5 percent of the total amount of orders for the "JET" project has gone into Swiss industry in terms of order volume. In contrast to this, the Swiss contribution to "JET" is valued at 3.4 percent of the total costs. The most important orders have concerned, among other things, the development and construction of magnetic-field coils (BBC), high-vacuum components, electronics parts, and electromechanical components.

In the development of a fusion reactor, problems relating to materials used are of great importance, especially those used in the region of the initial wall--which directly surrounds the plasma--and in the blanket, where the energy is to be drawn off and the tritium is to be produced. The highly energetic neutrons from DT [deuterium-tritium] fusion reactions in the plasma lead to radiation damage in the surrounding structural materials, and after a relatively long period of operation this damage can jeopardize the functioning of the reactor.

The Federal Institute for Reactor Research (EIR) is investigating such material damage experimentally, and it is using for that purpose the accelerator-produced proton beam available to it at the SIN. Through an association between Euratom and the Juelich Nuclear Research Facility (FRG), a tokamak (Textor) is being completed in Germany just now which is to be employed specifically for investigating plasma/wall interactions. The Inorganic Chemistry Institute of the University of Zurich (ACI) and the EIR are parties to this by way of direct research contributions. Similar investigations are being conducted on the TCA by the ACI jointly with the Lausanne ETH.

The liberated neutrons from DT fusion reactions could also be utilized for the generation of fissionable material for fission reactors. Such fusion-fission hybrid reactor schemes are being studied theoretically and experimentally at the Lausanne ETH and to some extent at the EIR.

In Switzerland at present, the annual research and development expenditures by the government for nuclear fusion amount to 10 to 20 million francs, depending on the way the infrastructure costs are charged. These expenditures are about 20 percent of the public research expenditures in the energy sector. In 1980, the National Energy Research Fund (NEFF) spent about 4 million francs in addition for nuclear fusion research.

Source: Federal Institute for Reactor Research (EIR).

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